

CLAIMS

1. An organic electroluminescence element comprising:
an anode;
a first emitting layer comprising at least a first host material and a first dopant;
a second emitting layer comprising at least a second host material and a second dopant; and
a cathode in the order mentioned:

wherein the energy gap E_{gh1} of the first host material, the energy gap E_{gd1} of the first dopant, the energy gap E_{gh2} of the second host material, and the energy gap E_{gd2} of the second dopant satisfy the following formulas; and

the luminescent intensity I_1 at the maximum luminescent wavelength of an emission spectrum derived from the first emitting layer, and the luminescent intensity I_2 at the maximum luminescent wavelength of an emission spectrum derived from the second emitting layer satisfy the following formula:

$$E_{gh1} > E_{gd1}$$

$$E_{gh2} > E_{gd2}$$

$$E_{gd1} > E_{gd2}$$

$$I_1 > 3.5 \times I_2.$$

2. An organic electroluminescence element according to claim 1, wherein the following formula is satisfied:

$$I_1 > 5 \times I_2.$$

3. An organic electroluminescence element according to claim 1 or 2, wherein E_{gd2} is more than 2.7 eV.

4. An organic electroluminescence element comprising:
an anode;

a first emitting layer comprising at least a first host material and a first dopant;

a second emitting layer comprising at least a second host material and a second dopant; and

a cathode in the order mentioned:

wherein the energy gap E_{gh1} of the first host material, the energy gap E_{gd1} of the first dopant, the energy gap E_{gh2} of the second host material, and the energy gap E_{gd2} of the second dopant satisfy the following formulas:

$$E_{gh1} > E_{gd1}$$

$$E_{gh2} > E_{gd2}$$

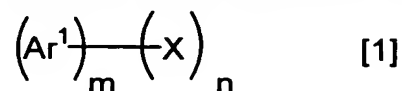
$$E_{gd1} > E_{gd2} > 2.7 \text{ eV.}$$

5. An organic electroluminescence element according to claim 1 or 4, wherein the ratio of the first dopant to the first host material is 0.1 to 10 mol% in the first emitting layer.

6. An organic electroluminescence element according to claim 1 or 4, wherein the ratio of the second dopant to the second host material is 0.1 to 10 mol% in the second emitting layer.

7. An organic electroluminescence element according to claim

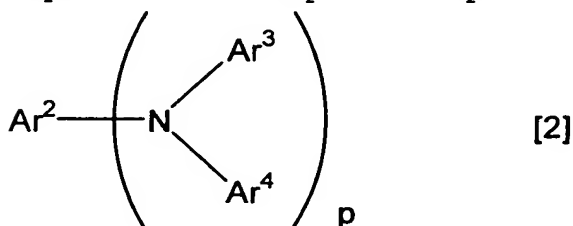
1 or 4, wherein at least one of the first host material and the second host material is a compound represented by a formula [1]:



wherein Ar^1 is an aromatic ring with 6 to 50 nucleus carbons, X is a substituent, m is an integer of 1 to 5 and n is an integer of 0 to 6, provided that Ars may be the same as or different from each other when m is 2 or more, and Xs may be the same as or different from each other when n is 2 or more.

8. An organic electroluminescence element according to claim 1 or 4, wherein the first host material is the same as the second host material.

9. An organic electroluminescence element according to claim 1 or 4, wherein at least one of the first dopant and the second dopant is a compound represented by a formula [2]:



wherein Ar^2 to Ar^4 are a substituted or unsubstituted aromatic group with 6 to 50 nucleus carbons, or a substituted or unsubstituted stylyl group; and p is an integer of 1 to 4; provided that Ar^3 s and Ar^4 s may be the same as or different from each other when p is 2 or more.

10. An organic electroluminescence element according to claim

1 or 4, wherein the first emitting layer has a film thickness of 10 nm or more.

11. An organic electroluminescence element according to claim 1 or 4, wherein the luminescent intensity I₂ at the maximum luminescent wavelength of an emission spectrum derived from the second emitting layer is 0.

12. An organic electroluminescence element according to claim 1 or 4, further comprising an electron injecting layer between the second emitting layer and the cathode, the electron mobility of the electron injecting layer being 10^{-4} cm²/(V · sec) or more.

13. An organic electroluminescence element according to claim 12, wherein the electron injecting layer comprises one or more organic compounds comprising a nitrogen-containing heterocyclic derivative.

14. An organic electroluminescence element according to claim 13, wherein the organic compound(s) is/are an imidazopyrazine derivative and/or an imidazole derivative.